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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/026,019

12/20/2001

Ralph H. Johnson

15436.436.3

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02/17/2006

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EXAMINER

NGUYEN, DUNG T

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 02/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/026,019	Applicant(s) JOHNSON, RALPH H.	
	Examiner Dung (Michael) T. Nguyen	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,3,5-7,9,14-16,18,21-30 and 32-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2,3,5-7,9,14-16,18,30,33 and 34 is/are allowed.
- 6) ☒ Claim(s) 21-29 and 32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 21-25 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ouchi (6046096) in view of Sun et al. (6567448).

With respect to claims 21-22, 24-25, and 28, Ouchi discloses an active region further comprising at least one quantum well comprised of InGaAsN and including AlGaAs barrier layers sandwiching said at least one quantum well (col.1, l.34-36).

Ouchi lacks AlGaAs confinement layers sandwiching said active region.

Sun teach AlGaAs confinement layers sandwiching said active region (col.3, l.50-54).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Ouchi what is taught by Sun to provide carrier confinement and to produce photon emission and optical amplification within the VCSEL (col.5, l.9-15).

With respect to claims 23 and 27, Ouchi discloses the thickness of the InGaAsN quantum well (col.7, l.38).

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Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ouchi (6046096) in view of Sun et al. (6567448) and further in view of Riechert et al. (2003/0179792). Ouchi and Sun disclose all limitations of the claim except for the InGaAsN barrier layers.

Riechert teach the InGaAsN barrier layers (para.0004, last two lines).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Ouchi and Sun what is taught by Riechert to employ an alternative semiconductor material for the barrier layers.

Claims 29 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riechert et al. (2003/0179792) in view of Sun et al. (6567448). Riechert a vertical cavity surface emitting laser (VCSEL), comprising: an active region further comprising at least one quantum well comprised of InGaAsN and including InGaAs (para.0002) or GaAsN (para.0010) barrier layers sandwiching said at least one quantum well.

Riechert lack AlGaAs confinement layers sandwiching said active region.

Sun teach AlGaAs confinement layers sandwiching said active region (col.3, 1.50-54).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Riechert what is taught by Sun to provide carrier confinement and to produce photon emission and optical amplification within the VCSEL (col.5, 1.9-15).

Response to Arguments

Applicant's arguments filed on 01/09/06 have been fully considered but they are not persuasive.

- On pages 14 (second paragraph) and 15 (third paragraph), Applicant argued that the Sun reference discloses the AlGaAs confinement layers being part of the active region and not sandwiching the active region. The examiner does not concur with the argument. Indeed, Sun does teach the AlGaAs confinement layers not being part of the active region (64) (column 2, line 48) and sandwiching the active region (64) (column 2, lines 52-53).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter:

Claims 30 and 33 are allowed over Ouchi, Jiang, Riechert, and Sun prior art because they fail to teach the limitation of GaAsN confinement layers sandwiching said active region.

Claim 34 is allowed over Ouchi, Jiang, Riechert, and Sun prior art because they fail to teach the limitation of a flattening layer interposed between the lower confinement layer and the at least one quantum well.

Claims 2-3, 5-7, 9, 14-16, and 18 are found allowable due to their dependency of claim 34.

Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung (Michael) T Nguyen whose telephone number is (571) 272-1949. The examiner can normally be reached on 8:30 - 17:00.

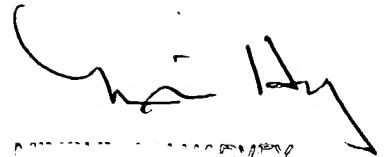
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3329.

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Michael Dung Nguyen



Michael Dung Nguyen